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NEVADA COOPERATIVE SNOW SURVEYS

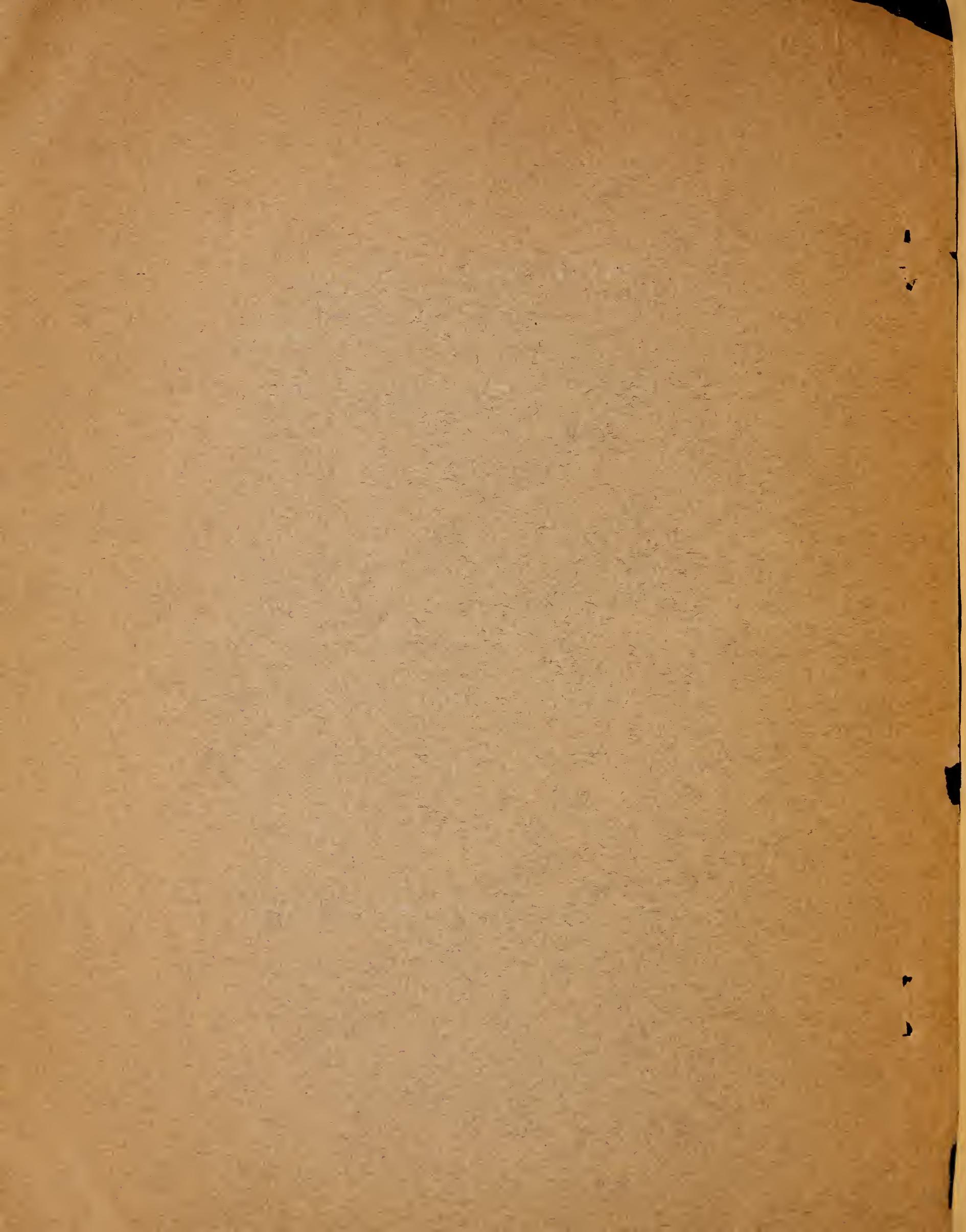
Part II. Humboldt River Basin,
Eastern and Southern
Nevada, and Nevada
National Wildlife Refuges.

Seasonal Snow Survey and Kindred Data,
March 1, 1943

Issued in cooperation with the Nevada Agricultural Experiment Station, United States Division of Irrigation of the Soil Conservation Service, Forest Service, Bureau of Reclamation, Weather Bureau, Geological Survey, Fish and Wildlife Service, Humboldt River Water Users, Nevada State Engineer, and Elko-Lamoille Power Company.

Nevada Agricultural Experiment Station

Reno, Nevada



MARCH 1, 1943

-PROGRESS-

The experience of 1941, 1942, and earlier years has demonstrated that a forecast for the flow of Great Basin streams cannot be attempted until the April 1 snow surveys have been made since the snowfall or lack thereof during the month of March makes a large difference in the expected yield of the watershed. The forecast has not been released until about April 10 for many years although the principal survey was made on March 1. Since there are some engineers and others that are interested in the data as soon as the surveys are made, it was deemed advisable to issue a bulletin giving this information as soon after March 1 as possible.

The present season, owing to the complete revision of the normals for runoff of the Humboldt River at Palisade and the consequent revision of all snow-survey normals in the Humboldt Basin, the publication of the March 1 data must be somewhat delayed. It is obvious, however, that water supplies will be abundant probably throughout the season.

In this bulletin, no attempt is made to give a forecast of the expected runoff of the streams. The data are published as received and computed and comparative figures of the water content on the courses for the past several years are given for the sake of those who desire to make their own study of the snow storage situation. There is also a table given which shows the increase or decrease of the snow water-content on the key courses during the month of March as shown by the March 1 and April 1 surveys. This table demonstrates the uncertainty of the amount of the final snowpack as shown by March 1 measurements.

The series of snow courses now organized has been supplemented by an additional high-level course in Baker Creek Basin in Eastern Nevada.

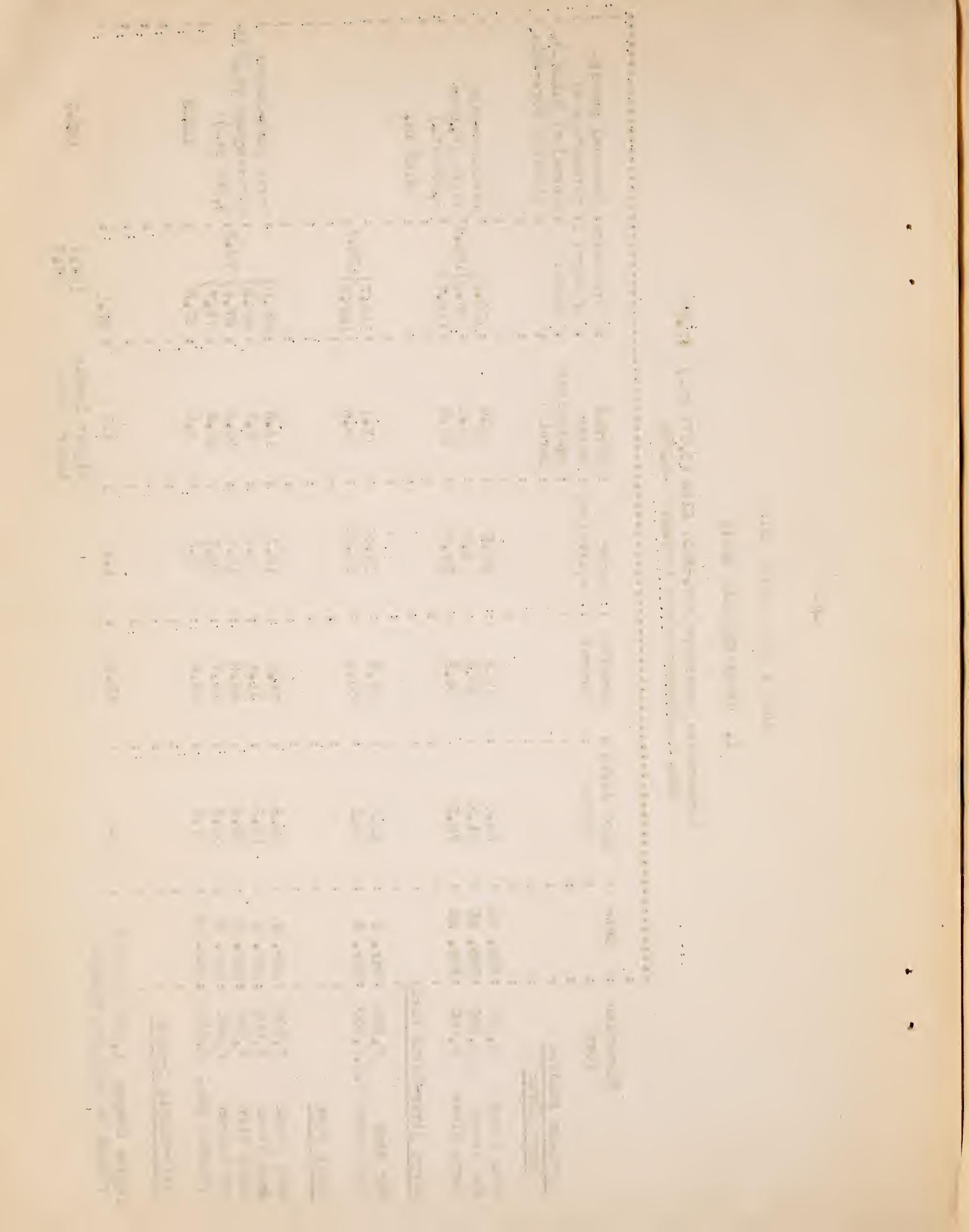
The regular forecast of stream flow together with detailed data will be issued, as in the past, about April 10th.

Prof. H. P. Boardman has computed all normals both of snow cover and streamflow and will prepare the tables of runoff of the tributaries of the Upper Humboldt River for the water year of 1941-1942 as he did for 1940-1941.

MARCH 1 SURVEY DATA

1. UPPER HUMBOLDT BASIN

Temperature departure Nov.-Feb. Elko (5,077 ft.) +2.6° F
Mean temperature above freezing -0.8° F

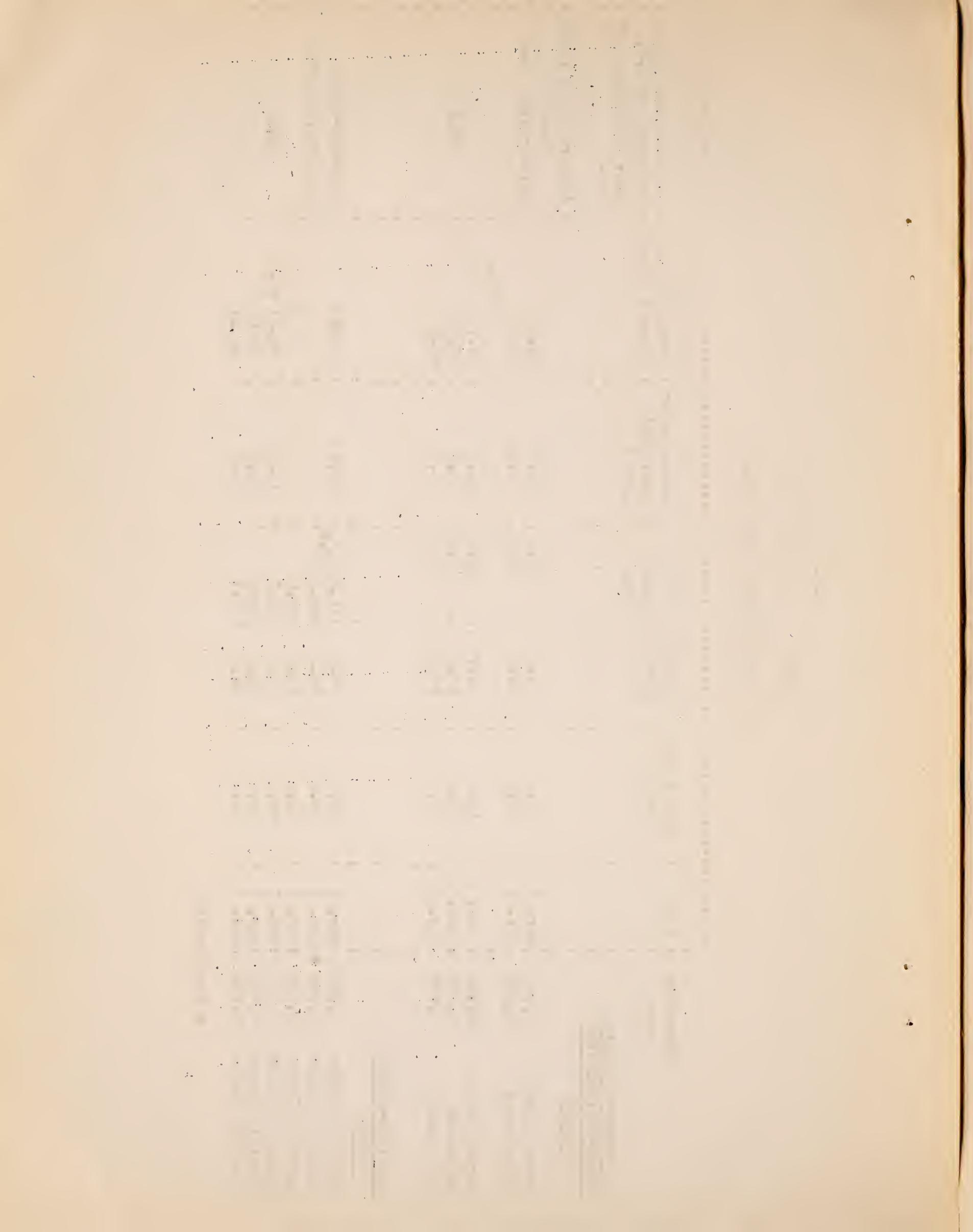


MARCH 1 SNOW SURVEY DATA

1. UPPER HUMBOLDT BASIN (Cont.)

Elevation feet	Date	Snow depth inches	Density percent	Water equivalent in cent imeters	March 1 normal equivalent in cent imeters	Normal water March 1	Percentage of normal at U.S. W.B. stations Nov.- Feb.	Seasonal percentage of normal at U.S. W.B. stations Nov.- Feb.
<u>Southern Feeders</u>								
<u>Trout-Starr-Secret Creeks</u>								
Trout Creek	8,500	Mar. 7	70.1	34.4	24.1	24.9	96.8)	100.0
Trout Creek	6,900	Mar. 7	14.8	32.4	4.8	8.4	57.1)	60.0
Dorsey Basin	8,100	Mar. 1	46.6	21.7	10.1	14.7	70.1	70.1
Dry Creek	6,500	Mar. 1	13.6	35.3	4.8	8.3	57.8)	60.0
Ryan Ranch	5,775	Feb. 28	3.3	24.2	0.8	3.0	26.7	27.0
<u>Lamoille-Rabbit Creeks</u>								
Lamoille Canyon	9,000	Mar. 2	81.8	38.6	31.6)	30.4	27.4	110.6)
Lamoille Canyon	9,000	† Mar. 2	78.3	37.2	29.1,))	(6,290-5,077 ft.)
Lamoille Canyon	8,500	Mar. 2	61.4	34.2	21.0)))
Lamoille Canyon	8,100	Mar. 2	44.2	31.0	13.7)	91.3)	97.9
Lamoille Canyon	7,600	Mar. 1	38.3	31.3	12.0)	93.8)	93.8
Lamoille Canyon	7,400	Mar. 1	33.5	34.9	11.7)	95.9)	95.9

† Cross course

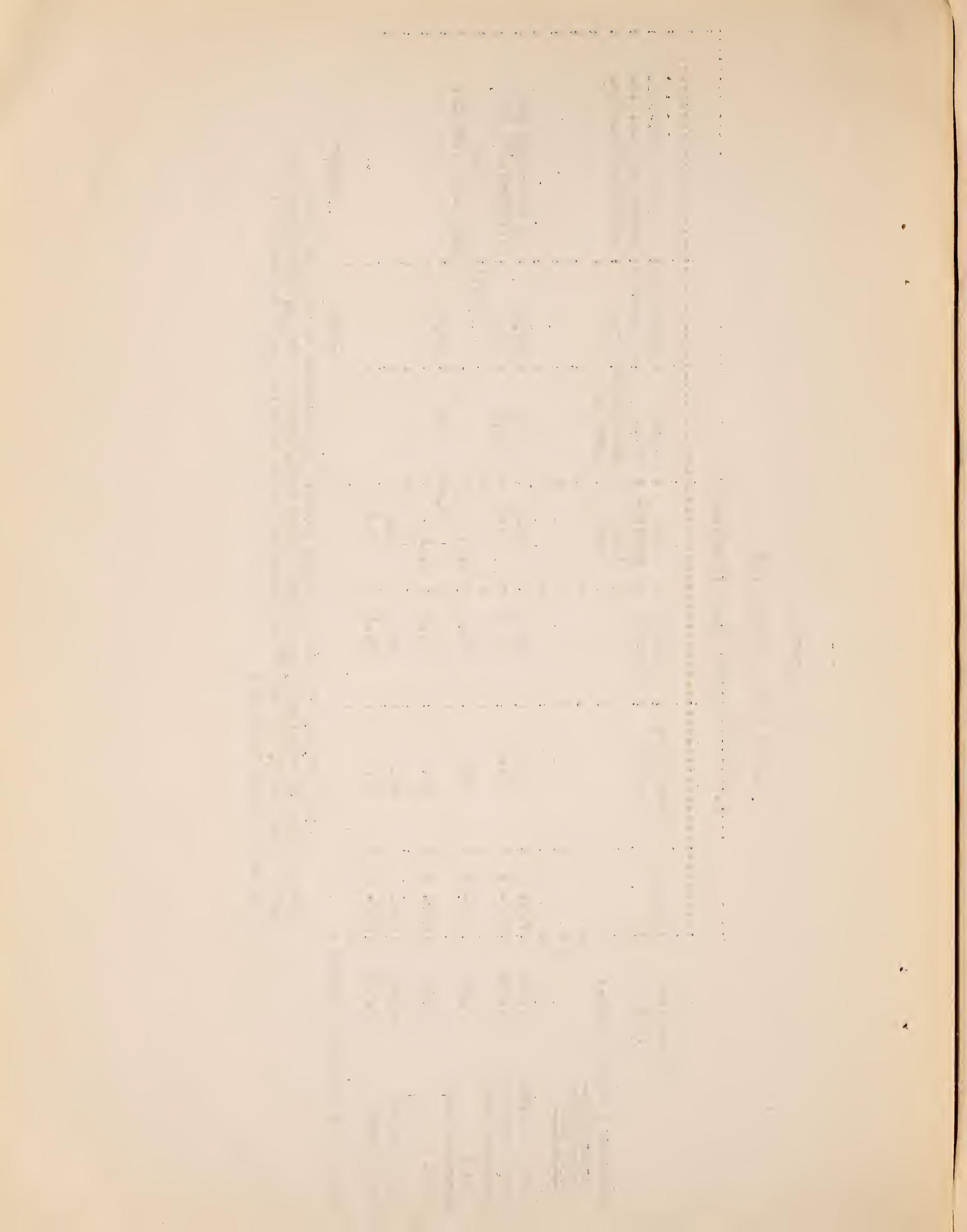


MARCH 1 SNOW SURVEY DATA

1. UPPER HUMBOLDT BASIN (Continued)

Southern Feeders (Cont.)	Date	Snow depth inches	Density	Water equivalent percent	Normal water equivalent inches	Porcentage of March 1: stations Nov.-Feb. March 1
<u>South Fork- Ruby Lake</u>						
Corral Canyon	Feb. 28	55.1	28.7	15.8	14.5	109.0
Green Mountain	Mar. 1	38.6	31.6	12.2	17.3	(7,081-6,200 ft.)
Harrison Pass						
No. 2	Mar. 2	12.4	21.0	2.6	2.6	70.1:
Harrison Pass						105.6
No. 1	Mar. 2	10.8	21.3	2.4	7.8	Ruby Lake 7.07 in.
Hager Canyon	Mar. 9	52.3	36.5	19.1		
Cave Creek	Mar. 9	38.3	38.1	14.6		
AVERAGE OF SOUTHERN FEEDERS						
					78.0*	122.9*

* The average for the Southern Feeders is computed by weighting the three groups of stations representing South Fork, Lamoille Creek, and Starr Creek on the basis of 2, 1, and 1/2 representing their relative contributions to the flow of the main Humboldt.



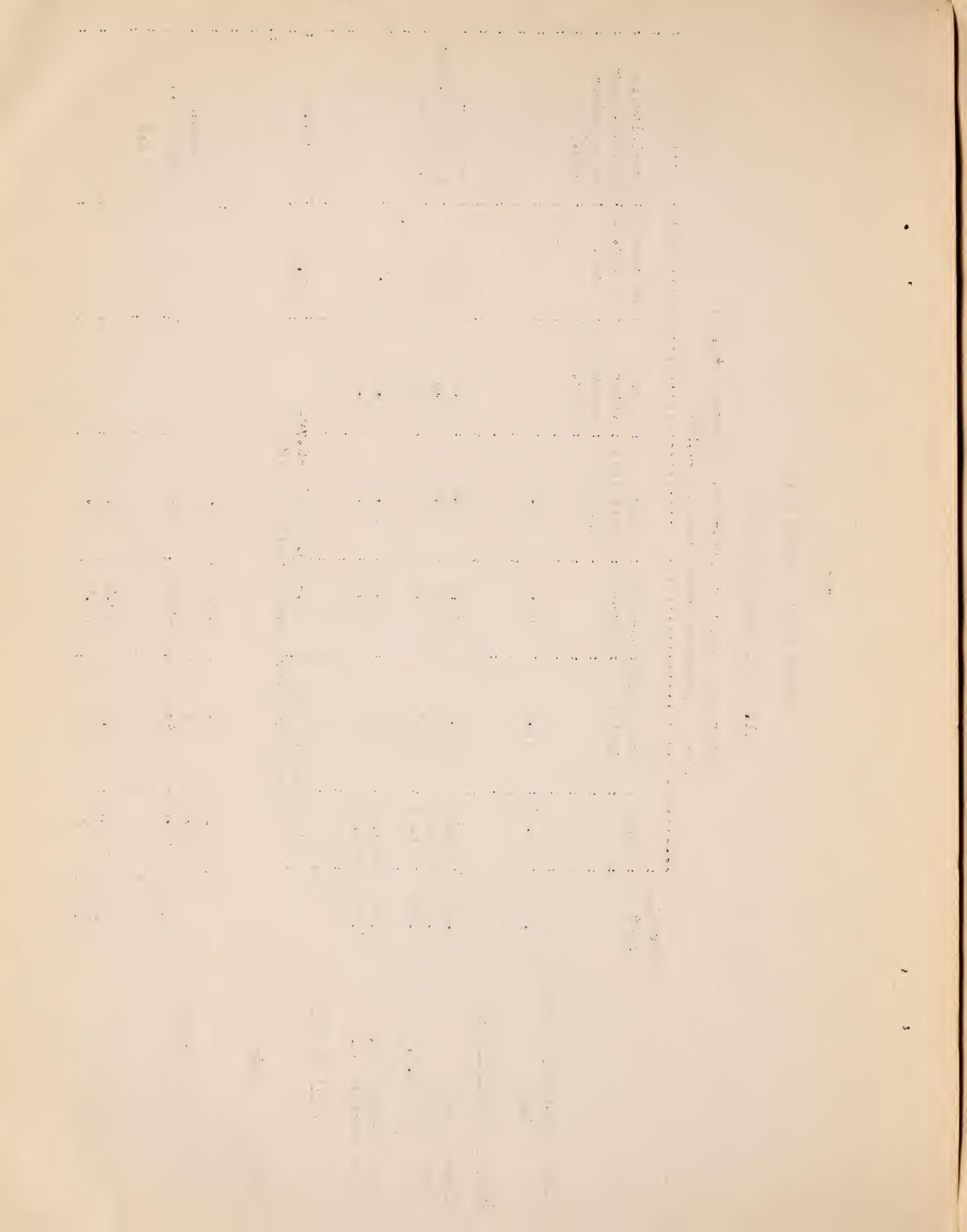
MARCH 1 SNOW SURVEY DATA

11. LOWER HUMBOLDT BASIN

Temperature departure Nov.-Feb. Winnemucca +3.50°F

Mean temperature above freezing +4.2°F

Elevation feet	Date	Snow depth inches	Density percent	Water equivalent inches	Normal water equivalent: normal Mar. 1	Precipitation of Mar. 1 : (U.S.W.B. per- centage Nov- Feb.)
Rock Creek-Little Humboldt Mides	7,000	Mar. 6	15.4	33.8	5.2	
Little Humboldt Basin						
Lamance Creek	7,000	Feb. 24	37.7	36.1	13.6	107.9
Granite Peak	8,600	Mar. 2	49.0	38.6	18.9	139.0
Martin Creek R.S.	7,000	Mar. 1	25.6	37.1	9.5	120.3
Upper Buckskin Mt.	8,200	Feb. 28	36.5	40.8	14.9	144.7
Lower Buckskin Mt.	6,800	Feb. 28	25.7	36.2	9.3	98.9
AVERAGE LITTLE HUMBOLDT BASIN						
Reese River Basin						
Big Creek		Feb. 25:	4.8	21.0	1.0	
Cabin Course		Feb. 25:	T		T	
Big Creek Camp Ground		Feb. 25:	13.1	26.0	3.4	
Upper Big Creek	8,000:					
Reese River						
Lower Corral	7,500:	Feb. 26:	6.8	39.7	2.7	
Upper Corral	8,500:	Feb. 26:	16.9	32.0	5.4	
						91.8



MARCH 1 SNOW SURVEY DATA

EASTERN NEVADA

Temperature Departure Nov.-Feb. Ely (6,257 ft.) OF
Mean temp above freezing -1.9° F

Elevation feet	Date	Snow depth inches	Density percent	Water equivalent: inches	Normal water inches	Precipitation of Mar. 1 (U.S.W.B.)	Percentage normal	Percentage Nov. Feb.
Steptoe Valley	Mar. 1	15.0	33.3	5.0	5.0	6.257	100%	6.257 in.
Murray Summit	Mar. 1	15.0	33.3	5.0	5.0	6.257	100%	6.257 in.
Baker Creek	Mar. 1	48.0	27.1	13.0	13.0	2.257	100%	2.257 in.
Baker Creek No. 3	Mar. 1	49.3	26.0	12.8	12.8	2.257	100%	2.257 in.
Baker Creek No. 2	Mar. 1	20.4	29.4	6.0	6.0	2.257	100%	2.257 in.
Baker Creek No. 1	Mar. 1	7.950	7.950	1.0	1.0	0.257	100%	0.257 in.

SOUTHERN NEVADA

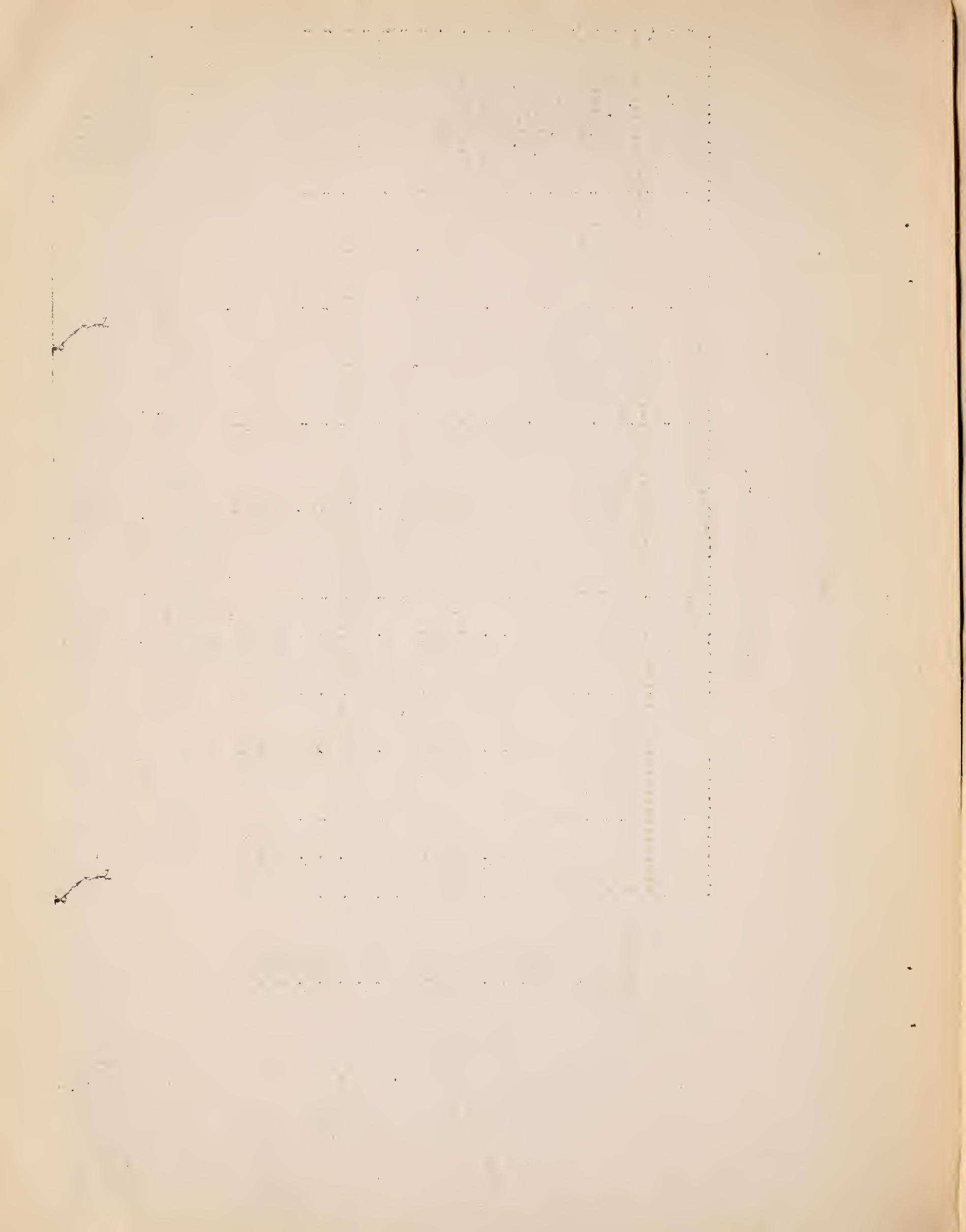
Charleston M.	Kyle Canyon	Rainbow Canyon	Lee Canyon	Lee Canyon
8,200	Feb. 28 :	47.6	33.0	15.7
7,400				
7,800	Feb. 28 :	50.7	32.9	16.7
9,000	Mar. 5 :	54.0	32.0	17.4
8,300	Mar. 4 :	43.5	32.0	13.9

WILDLIFE REFUGES

Sheldon National Antelope Refuge (Northern Washoe County)
Temperature Departure Nov.-Feb. Cedarville (4,675 ft.) +0.2° F
Mean temp. above freezing +2.1° F

Peterson Canyon and
Bald Mountain Creek
Mahogany Mountain
Virgin

Cedaryville (4,675
ft.) 1⁵⁷,8



MARCH 1 SNOW SURVEY DATA

Ruby Lake National Wildlife Refuge (Southern Elko County)

Temperature departure Nov.-Feb. Elko (5,077 ft.) +2.6° F

Mean temp. above freezing -0.8° F

Elevation feet	Date	Snow depth inches	Density percent	Water equi- valent fir. inches	Normal water equivalent inches	Percentage of Mar. 1 normal	Percentage Nov.- Feb.	Precipitation (U.S.W.B.)
Hager Canyon	8,500	Mar. 9	52.3	36.5	19.1	:	:	:
Cave Creek	7,000	Mar. 9	38.3	38.1	14.6	:	:	(Arthur 6,500 ft.) normal 7.38 in.

86.2

Ruby Lake (6,200 ft.)
7.07 in.

Comparison of March 1 Snow-Survey Data
1936-1943
Water Content only

Courses	Eleva-	1943	1942	1941	1940	1939	1938	1937	1936
	tion	:	:	:	:	:	:	:	:
	feet	:	:	:	:	:	:	:	:
1. Upper Humboldt:									
Basin									
Northern Feeders									
Marys River									
Bear Creek	8,100	22.5	18.3	14.2	15.3	16.6	16.3	15.6	22.5
Fox Creek	6,900	9.6	9.8	7.6	5.7	8.7	7.2	9.1	13.6
Marys River	8,000	24.0	17.7		14.7	16.5	14.2	14.9	25.4
Marys River-North Fork									
Big Bend	6,800	16.3	10.2	9.9	6.4	7.2	8.2	9.4	16.4
Gold Creek h.s.	6,600	10.9	8.1	6.2	4.7	4.5	4.8	7.8	11.2
North Fork									
Jack Creek	7,800	12.3	11.5	9.4	8.9	12.9	4.5	7.3	15.4
Jack Creek	7,000	3.3	6.7	4.2	1.3	7.9	2.4	4.4	8.2
Rodeo Flat	7,000	12.5	11.4	10.5	7.5	11.0	6.5	8.6	18.8
Fry Canyon	6,800	10.7	10.5	9.2	6.5	10.0	7.2	10.0	18.1
Tremewan Ranch	5,600	2.3	4.1	3.2	0	2.4	0	4.9	5.5
Susie-Maggie Creeks									
Taylor Canyon	5,200	4.4	8.5	8.3	3.0	5.6	4.9	7.8	10.3
Southern Feeders									
Trout-Starr-Secret Creeks									
Trout Creek	8,500	24.1	17.5	24.9	19.7	19.6	16.1	22.7	28.8
Trout Creek	6,900	4.8	9.0	6.5	7.4	5.0	6.5	8.6	8.6
Dorsey Basin	8,100	10.1	14.0	9.6	11.3	8.1	6.1	10.0	19.8
Dry Creek	6,500	4.8	7.6	6.6	3.2	3.6	5.8	9.6	11.0
Ryan Ranch	5,775	0.8	4.3	0.4	0.5	1.6	1.5	4.8	3.5
Lamoille-Rabbit Creeks									
Lamoille Canyon	9,000	31.6	23.8	22.7	20.4	23.4	19.0	20.3	36.5
Lamoille Canyon	9,000	29.1	23.7	21.3	19.4	22.7	16.3	20.3	34.2
Lamoille Canyon	8,500	21.0	18.5	15.3	14.7				
Lamoille Canyon	8,100	13.7	13.3	11.2	11.8	12.6	10.7	12.9	17.4
Lamoille Canyon	7,600	12.0	12.7	9.4	9.1	9.4	9.2	10.5	14.1
Lamoille Canyon	7,400	11.7	12.4	10.2	7.4	8.6	8.9	10.3	14.3
South Fork-Ruby Lake									
Corral Canyon	8,500	15.8	15.8	13.2	14.4	16.1	11.3	8.1	16.5
Green Mountain	8,000	12.2	14.1	13.7	13.1	15.3	11.1	11.8	20.6
Harrison Pass No.2	7,400	2.6	7.7	6.0	4.9	5.3	5.5	5.6	8.0
Harrison Pass No.1	6,600	2.3	6.5	5.4	4.6	5.1	4.4	5.2	7.9
Hagar Canyon	8,500	19.1	21.0	14.8	19.3				
Cave Creek	7,000	14.6	16.2	0	12.4				

+ Cross Course

Comparison of March 1 Snow Survey Data
1936-1943 (Continued)

Courses	Eleva-	1943	1942	1941	1940	1939	1938	1937	1936
	tion	:	:	:	:	:	:	:	:
	feet	:	:	:	:	:	:	:	:
2. Lower Humboldt:									
Basin									
Rock Creek-Little									
<u>Humboldt River</u>									
Midas	7,000	5.2	9.2	7.3	5.2				
Little Humboldt									
Basin									
Lamance Creek	7,000	13.6	10.4	11.9	9.9	8.7	6.9	11.0	19.9
Granite Peak	8,600	13.9	12.7	15.7	15.0	12.8	13.5	7.9	12.8
Martin Creek R.S.	7,000	9.5	8.3	7.8	6.8	5.8	8.1	6.0	7.5
Upper Buckskin Mt	8,200	14.9	11.2	13.4	10.8	8.0	7.2	6.8	13.3
Lower Buckskin Mt	6,800	9.3	7.6	8.4	5.8	6.7	8.1	8.3	11.1
Reese River Basin:									
Big Creek									
Upper Big Creek	8,000	3.4	6.6						
Cabin Course		1.0	4.9						
Camp Ground		T	4.7						
Reese River									
Upper Corral	8,500	5.4	5.0						
Lower Corral	7,500	2.7	3.0						
3. Eastern Nevada:									
Steptoe Valley									
Murray Summit	7,500	5.0	3.7						
Baker Creek									
Baker Creek No.3	9,250	13.0							
Baker Creek No.2	8,950	12.8	15.6						
Baker Creek No.1	7,950	6.0	5.3						
4. Southern Nevada									
Charleston Mt.									
Kyle Canyon	8,200	15.7	8.8						
Kyle Canyon	7,400		5.4						
Rainbow Canyon	7,800	16.7	10.5						
Lee Canyon	9,000	17.4	9.9						
Lee Canyon	8,300	13.9	7.8						
5. Nevada Wildlife									
Refuge									
Sheldon Antelope									
Refuge									
Bald Mountain									
Peterson Canyon and									
Bald Creek									
Mahogany Mountain	6,720	7.7	6.2	5.9					
Virgin	5,680	0.7	3.0	5.3					
Ruby Lake Wildlife Refuge									
Hagar Canyon	8,500	19.1	21.0	14.8					
Cave Creek	7,000	14.6	16.2	0					

WINTER PRECIPITATION
(U. S. Weather Bureau)

1. Upper Humboldt Basin

Northern Feeders	Marys River	North Fork	Susie Creeks
Stations	Jarbridge: Mala Vista:	North Fork:	Owyhee: Tuscarora

Maggie-

Elevation (Ft. alt.)	(6,100)	(5,585)	(6,500)	(5,400)	(6,400)
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November	4.46	1.58	2.62	1.84	3.22
December	0.98	1.76	1.95	1.56	2.88
January	3.68	1.95	2.59	1.40	3.53
February	1.25	0.80	0.80	0.82	0.91
Total	<u>10.37</u>	<u>6.09</u>	<u>7.96</u>	<u>5.62</u>	<u>10.51</u>

Weather Bureau Normal (Nov.-Feb.)		4.64	5.10	6.02
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Seasonal Percentage of Normal		171.6	110.2	175.1
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Area Percentage		152.3
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Northern Feeders	152.3
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Southern Feeders	Trout-Starr-Secret Creeks: Lamoille-Rabbit: South Fork
Stations	Wells: Clover Valley: Arthur: Creeks Ruby
Elevation (Ft. alt.)	(5,633) (5,800) (6,500) (6,290) (5,077) (7,081) (6,200)

November	2.72	1.50	3.14	2.77	1.75	1.96
December	2.33	1.10	1.61	1.71	1.25	3.03
January	2.84	2.54	1.82	1.68	0.67	1.01
February	1.01	1.22	2.02	0.65	1.55	1.07
Total	<u>8.93</u>	<u>6.36</u>	<u>8.59</u>	<u>6.81</u>	<u>5.22</u>	<u>7.07</u>

Normal (Nov.-Feb.)	4.00	6.21	7.38	6.25	4.43	5.04
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Seasonal Percentage of Normal	223.3	—	86.2	137.4	153.7	103.6	—
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Area Percentage	154.8		145.6		103.6	
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Southern Feeders	122.9*
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*See Footnote p. 4

WINTER PRECIPITATION

(U. S. Weather Bureau)

2. Lower Humboldt Basin

Stations	Paradise Valley	Orovada	Austin	Battle Mountain	Winne-mucca	Rye Dam	Patch lock	Lov-
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Elevation (Ft. alt.)	(4,650)	(4,300)	(6,594)	(4,513)	(4,287)	(4,161)	(3,977)	
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November	2.80	1.98	1.41	1.15	1.93	0.58	0.35
December	1.74	2.41	0.66	1.37	1.81	1.06	1.16
January	3.07	1.61	0.36	1.43	1.87	2.53	2.06
February	<u>1.10</u>	<u>0.61</u>	<u>1.50</u>	<u>0.91</u>	<u>0.60</u>	<u>0.56</u>	<u>0.56</u>

Total	3.71	6.64	5.93	4.36	6.21	4.73	4.13
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Normal (Nov.-Feb.)	4.10	4.09	4.28	2.54	3.70		1.71
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Seasonal Percentage of normal	212.4	162.3	91.8	191.3	167.8		241.5
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Area Percentage	187.4		91.8		179.6		241.5
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3. Eastern Nevada

4. Southern Nevada

5. Wildlife
Refuge

Station (Ft. alt.)	Ely (6,257)	Lehman Caves	Charleston R.S. (7,165)	Ruby Lake (6,200)	Sheldon (6,500)
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Nov.	0.61	0.76	—	1.96	2.27
Dec.	0.06	0.28	—	3.03	1.81
Jan.	1.00	1.26	—	1.01	2.94
Feb.	<u>0.50</u>	<u>1.41</u>	—	<u>1.07</u>	<u>0.77</u>
Total	2.17	3.71		7.07	7.79

Normal (Nov.-Feb.)	—	—	—	—	—
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Seasonal Percentage of normal		(Las Vegas 62.8)	(Arthur 86.2)	(Cedar- ville 153.8)
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WINTER RUNOFF 1941-1942 (Nov.-Feb.)
(acrefeet)

Humboldt River at Palisade

	1940-1941	1941-1942	1942-1943	Normal*
Nov.	1,570	10,997	5,530	4,600
Dec.	2,200	16,459	13,400	5,400
Jan.	3,840	16,550	35,880	6,600
Feb.	13,346	20,269	70,520	12,200
Total	21,036	64,275	125,330	28,800
	(73.0%)	(223.2%)	(435.2%)	

*37-year normal (adopted 1942)

Martin Creek at U. S. Gaging Point

	1940-1941	1941-1942	1942-1943	Normal*
Nov.	510	400	approx.	682
Dec.	550	500	"	1,140
Jan.	555	600	"	7,010
Feb.	2,650	800	"	6,090
Total	4,265	2,300	"	3,680
	(115.9%)	(62.0%)		(205.5%)

WINTER TEMPERATURE DEPARTURE FROM NORMAL °F.

	Elko	1940-1941	1941-1942	1942-1943
Nov.	-2.6	0.0	-1.1	-2.1
Dec.	+4.0	+4.7	+6.0	+4.3
Jan.	0.0	+0.8	+5.4	+5.5
Feb.	+4.0	-5.5	+0.2	+3.2
Average	+1.4	0.0	+2.6	+3.4

	Winnemucca	1940-1941	1941-1942	1942-1943
Nov.	-	-	+6.8	+1.4
Dec.	-	-	+5.0	+3.6
Jan.	-	-	-2.8	+3.4
Feb.	-	-	-1.9	+5.7
Average	-	-	+1.8	+3.5

MEAN TEMPERATURE DURING WINTER ABOVE 32°F (freezing)

	Elko	1940-1941	1941-1942	1942-1943
Nov.	+0.5	+2.8	+3.0	+4.3
Dec.	0	0	-0.2	+2.3
Jan.	0	+3.1	-3.6	+1.9
Feb.	+0.9	+3.2	-2.2	+7.7
Average	+0.3	+2.5	-0.8	+4.0

	Winnemucca	1940-1941	1941-1942	1942-1943
Nov.	-	-	+9.3	+7.8
Dec.	-	-	+5.0	+1.6
Jan.	-	-	+3.7	0.0
Feb.	-	-	+9.2	+7.2
Average	-	-	+6.4	+4.2

-12a-

WELL MEASUREMENTS

March 1

Upper Humboldt Valley
(Average of 7 wells)*

To water level:

1941.....	12.90	ft.
1942.....	9.19	ft.
1943.....	2.97	ft.
1935.....	5.03	ft.
1936.....	3.72	ft.
1937.....	3.57	ft.
1938.....	4.50	ft.
1939.....	3.92	ft.
1940.....	4.50	ft.
1941.....	5.70	ft.
1942.....	3.80	ft.
1943.....	3.40	ft.

*Approximately April 1

FORECAST

Until a further analysis can be made of the snow cover April 1 and the precipitation and runoff during April, only a general forecast of trends in the seasonal flow for March-July will be attempted.

The snow cover March 1 was:

Upper Humboldt Basin

Northern Feeders.....104.9 percent (Lower levels
57.5)

Southern Feeders.....78.0 " (Lower levels
26.7)

Lamoille Creek.....97.9 "

South Fork.....70.1 "

Runoff at Palisade.....130.0 "

Lower Humboldt Basin

Little Humboldt Basin.....122.1 "

Quinn River.....125.7

Roose River (No normal
U.S.W.B)..... 91.8

The winter precipitation as measured by the U. S. Weather Bureau shows the same trends as the snow cover in percentage of normal but is far higher, being 152.3, 122.9, and 187.4 for the Northern and Southern Feeders of the Upper Humboldt and Little Humboldt areas respectively. In the Roosse River basin the snow cover and precipitation seem to be closely similar, the snow cover being only slightly greater than a year ago while the precipitation is 20 percent lower.

The snow at lower elevations is scant. At Tremewan Ranch (5,600 ft.) on the Northern Feeders it is 57.1 percent and at Ryan Ranch (5,775 ft.) on the Southern Feeders only 26.7 percent.

The relative deficiency in snow at elevations of 7,000 feet and lower is naturally due to rain and melting prevalent during the winter and should preclude further floods, which have had unprecedented crests and have been destructive to bridges and stream gages.

The wells in Humboldt and Lamoille Valleys in March were higher than for previous years of record, except 1942 in the former. The winter runoff of the Humboldt (Nov.-Feb.) at Palisade was 125,000 acrefeet or more than half of the summer normal. This is unprecedented in the flow of the river and far above any previous record such as 1907-08 and 1913-14. The percentages of normal were: November 120.2, December 248.1, January 543.6, and February 578.0.

The high water table and copious rains will reduce the usual absorption from melting snow with consequent increase in the streams. Furthermore, the high winter runoff has primed the stream bed and already filled the Pit-Taylor and Rye Patch Reservoirs beyond capacity.

There is therefore abundant reason to expect that the percentage of the snow cover will be realized in the flow of the streams especially since the revised normal is 40,000 acre feet or 16 percent lower than the original.

It is even probable that the ground water may increase the flow of the main Humboldt and low-level streams by 40 percent or more as apparently happened last season.

Lack of rain during runoff may, however, offset the effect of the water table or excess rain may build it up. The loss of low-level snow may likewise reduce the early flow though it will still be copious, for despite a deficiency of 57 percent in the March precipitation at Elko, the flow of the Humboldt has already attained 103,600 acre feet (318 percent of the March normal) or nearly one-half of the total normal summer flow.

The winter precipitation in the Little Humboldt- Quinn River area was 187.4 percent of normal but the snow cover was only 122.1 percent. At the higher elevations, however, the snow cover was 140 to 145 percent of normal and the winter runoff was 405.5%.

In the Reese River Basin, the winter precipitation was 91.8 percent as compared with 111.9 percent last year. The snow cover, however, is only 58.5 percent of last season's.

In Eastern Nevada in Steptoe Valley the snow cover is 35 percent better but in Baker Creek Basin is 10 percent poorer this season than last.

In Southern Nevada in the Charleston Range the snow cover this season is 72 percent better than last but no precipitation from records are available from the adjacent ranger station. The records/ the low-level stations at Las Vegas or Boulder City bear too little relationship to the snowfall in the mountains to be used for comparison.

In the two Wildlife Refuges, the snow is approximately 90 percent of that of last season--but the winter precipitation is 150 percent of normal.

The Floods of 1943

In the last week of January the Humboldt River at Palisade discharged a maximum of 2,146 cubic feet per second provided mainly from the Northern Feeders. The North Fork washed away in the flood at this time the automatic stream recorder as well as the bridge

on Highway 40 and staff gages were lost on Susie and Mary Creeks. On Martin Creek and at Chimney Dam site on the Little Humboldt the recorders were submerged and the channel eroded.

Again, during the last week of February the Humboldt at Palisade rose to an estimated 5,420 second feet and during the first half of March has flowed from 1,510 to 3,038 second feet.

The U. S. Geological Survey and Forest Service have furnished the following details:

"Unusual conditions: Unusually high stream flow continued from the Humboldt River Basin in Nevada. Total run-off for the month of February at the gaging station on the Humboldt River at Palisade again established a new all time record. It was 980% of the 36 year median and 153% of the previously recorded high which occurred in February 1921. During the period Feb. 22-25 light to moderate precipitation fell on ground and snow that had been previously primed for maximum run-off conditions during heavy storms in January. These factors accompanied by temperatures above normal produced a peak discharge at Palisade of 6,470 second feet. The previous maximum flow recorded at this location was 4,300 second feet on March 5, 1921. A large part of the flood waters in the Humboldt River Basin came from northern tributaries and drainage areas at intermediate elevations. Considerable areas of agricultural land including live-stock feeding grounds and haystacks along the main stem of the Humboldt River were flooded. Highways and diversion dam structures were also damaged. Flood waters were again recorded in the Little Humboldt River Basin. However, they were not as high as those for the previous month when maximum discharge and total runoff exceeded all past records." -- U.S.G.S.

"Replying to your request for some details of our latest flood, we have had good amounts of both snow and rain through the winter. Precipitation in February, however, was not heavy. From February 13 to 22, maximum temperatures stayed in the fifties. Warm southerly winds were blowing at this time. The river started to rise on the 21st. On the 22nd and 23rd, the minimum temperatures were above freezing. The flood reached its highest point on February 25th at 1 p.m. The water is still high but confined more to the river channel. (March 8)

"For you to analyze further we are including some local weather data:

Precipitation (inches)	Temperatures			Precip.
	Feb.	Max.	Min.	
November, 1942 : 2.77	18	51	22	0
December, 1942 : 1.71	19	52	24	5
January, 1943 : 1.68	20	53	24	0
February, 1943 : .65	21	50	30	.06
	22	52	33	.15
	23	42	32	.01
	24	38	30	.10
	25	44	26	0
	26	47	22	0

"The reasons for the flood seem to be a combination of several factors: warm southerly winds and comparatively high temperatures starting on February 18, and light warm rains helping the snow melt rapidly. The ground was already soaked, largely from the precipitation of last November.

"The snow has now disappeared into the foothills. None of the high snow reserves seem to have been lost yet although there has been considerable settling." U.S.F.S.

Nevada Agricultural
Experiment Station
Reno, Nevada
April 1, 1943

J. E. Church, Meteorologist and
Forecaster
H. P. Boardman, Associate

